Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for estimating an image illuminant, the method comprising:

    calculating color gamut models for a plurality of candidate illuminants;

    generating an illuminant color gamut histogram for each of said color gamut models;

    calculating an image color gamut;

    generating an image color gamut histogram for said image color gamut;

    determining a distance match metric for each of said candidate illuminants with reference to said image color gamut, wherein said distance match metric is related to the sum of the differences between corresponding illuminant color gamut histogram values and image color gamut histogram values; and

    selecting an image illuminant from said plurality of candidate illuminants based on said distance match metric.

2. (currently amended) A method for estimating an image illuminant, the method comprising:

    calculating color gamuts for a plurality of candidate illuminants;

    generating candidate illuminant color gamut histograms for each of said plurality of candidate illuminants;

    calculating a self-luminosity feature comprising a feature indicating the degree to which image elements are similar to self-luminous image elements or reflective image elements;

    separating likely self-luminous image elements from likely reflective image elements;

calculating an image color gamut wherein said reflective image elements are considered differently than said self-luminous image elements;

generating an image color gamut histogram based on said image color gamut;

determining a match metric for each of said candidate illuminants, wherein said match metric is related to differences between corresponding values in said image color gamut histogram and said candidate illuminant color gamut histograms; and

selecting an image illuminant from said plurality of candidate illuminants based on said match metrics.

3. (original) A method as described in claim 2 wherein calculating a self-luminosity feature comprises a binary value indicating that an element is reflective or self-luminous.

4. (canceled)

5. (currently amended) A method as described in claim 2 wherein said separating self-luminous image elements comprises determining the proximity of an image element to image boundaries.

6. (currently amended) A method as described in claim 2 wherein said ~~separating self-luminous image elements~~ calculating a self-luminosity feature comprises comparing the color characteristics of an image element to the color characteristics of reflective surfaces under a known illuminant.

7. (currently amended) A method as described in claim 2 wherein said ~~separating self-luminous image elements~~ calculating a self-luminosity feature comprises comparing the luminance characteristics of an image element to those of known self-luminous objects.

8. (original) A method as described in claim 2 wherein said calculating an image chromaticity gamut is based solely on said reflective image elements.

9. (original) A method as described in claim 2 wherein said calculating an image chromaticity gamut is based on a weighted distribution of said reflective image elements and said self-luminous image elements wherein said reflective image elements have a greater influence on said gamut.

10. (currently amended) A method as described in claim 1 wherein said determining a match metric comprises calculating a chi-squared statistic related to the variance of the image color gamut histogram relative to a candidate color gamut histogram.

11. (currently amended) A method for estimating an image illuminant, the method
comprising:

calculating color gamuts for a plurality of candidate illuminants;

identifying image elements according to their likelihood of being self-
luminous, wherein said identifying comprises determining a proximity of said
image elements to an image boundary and said image elements are identified as
more likely to be self-luminous when they are more proximate to an image
boundary;

calculating an image color gamut from said image elements wherein said
image elements that are more likely to be self-luminous have a lower weight than
image elements that are more likely to be reflective elements;

determining a match metric for matching a color gamut histogram for each
of said candidate illuminants to a color gamut histogram for said image elements;
and

selecting an image illuminant from said plurality of candidate illuminants
based on said match metric.

12. (currently amended) A method for estimating an image illuminant, the method
comprising:

selecting a set of known illuminants;

establishing a color gamut for each of said known illuminants wherein
said gamuts are represented by sample distribution histograms of color values for
a set of color chips as rendered under each of said known illuminants;

estimating a weight value related to the probability that an image element
in an image corresponds to a reflective surface;

establishing a color gamut histogram for said image wherein said weight
value is used to increment the an accumulator of a corresponding histogram bin;

computing a match metric between said image color gamut histogram and
at least one said known illuminant sample distribution histograms, wherein said

match metric is related to the sum of the differences between said image color gamut histogram values and corresponding illuminant sample distribution histogram values; and

selecting an estimated image illuminant from among said set of known illuminants wherein said estimated image illuminant has the closest match to the image color gamut histogram.

13. (original) A method as described in claim 12 wherein said estimating a weight value comprises using a function comprising element color values and two image position values.

14. (currently amended) A method as described in claim 12 wherein said computing a match metric comprises using a chi-squared statistic measuring the normalized squared difference between said image chromaticity histogram and said known illuminant ~~chromaticity~~ color gamut histogram~~s~~ values.

15. (currently amended) A system for estimating an image illuminant, the system comprising:

a first calculator for calculating color gamuts for a plurality of candidate illuminants;

a first histogram generator for generating illuminant color gamut histograms;

a second calculator for calculating the degree to which an element is self-luminous ~~vs. reflective~~;

a third calculator for calculating an image color gamut wherein said reflective image elements are considered differently than said self-luminous image elements;

a second histogram generator for generating an image color gamut histogram based on said image color gamut;

a matcher for determining a match metric for each of said candidate illuminants, wherein said match metric is based on the sum of the differences between values in said image color gamut histogram and corresponding values in said illuminant color gamut histograms; and

a selector for selecting an image illuminant from said plurality of candidate illuminants based on said match metric.

16. (currently amended) A computer-readable medium comprising a set of computer-executable instructions for estimating an illuminant of an image, said instructions comprising the acts of:

calculating color gamuts for a plurality of candidate illuminants;

generating illuminant color gamut histograms corresponding to said illuminant color gamuts;

calculating a self-luminosity feature that estimates the degree to which an element is self-luminous vs. reflective;

calculating an image color gamut wherein said reflective image elements are considered differently than said self-luminous image elements;

generating an image color gamut histogram based on said image color gamut;

determining a match metric for each of said candidate illuminants, wherein said match metric is based on the sum of the differences between said values in said image color gamut histogram and corresponding values in said illuminant color gamut histograms; and

selecting an image illuminant from said plurality of candidate illuminants based on said match metric.